

# 621B SCRAPER



# ADMINISTRATION

- Terminal and Enabling Learning Objectives
- Lecture Method, Computer Generated Slides, and a Demonstration on the 621B, and a Practical Application
- Admin/Safety Brief
- 25 Question Written Examination
- Performance Evaluation Examination

# CHARACTERISTICS

- **Is a motorized, single axle, 4 wheeled earthmover**
- **Powered by a Caterpillar 3406, 330 HP, 6 Cylinder turbocharged diesel engine**
- **Has a semi-automatic transmission capable of 8 speeds forward and 1 speed in reverse**
- **Designed to operate using a push loader for loading assistance**

# || CAPABILITIES

- **All weather operation**
- **High ground clearance of 18 inches**
- **Adjustable cutting edges**
- **Max speed of 31 MPH with no load and 20 MPH with a load.**
- **Optimum hauling distance: 300' to 5000'**
- **Can move 48,000 lbs of material**

# SCRAPER BOWL

- **Struck capacity of 14 LCY**
- **Heap Capacity of 18 LCY**

# DIMENSIONS

- **Length - 499"**
- **Width - 136"**
- **Height - 141"**
- **Weight empty - 66,590**
- **Weight loaded - 114,590**



# Turning Radius 18 ft. 3 in.



# CHARACTERISTICS

**The design of the 621B allows for:**

**- LOADING**

**-  
HAULING**

**DUMPING  
- SPREADING**

**- ROUGH LEVELING**



# MAJOR COMPONENTS - ENGINE

- **CAT 3406, 330 HP, 6 Cylinder turbocharged diesel engine**
- **Holds 9 gals of 10W30**
- **HOT/COLD Check**
- **Requires 3-5 minute warm up and cool down time.**

# MAJOR COMPONENTS - FUEL

- **135 gals Diesel or JP8**
- **Checked via dipstick, must have minimum of 30%**
- **Equipped with a fuel water separator**

# MAJOR COMPONENTS – AIR INDUCTION SYSTEM

- **Equipped with a Pre-cleaner, primary and secondary filter**
- **Service when air restriction indicator reads red**
- **Use 30 PSI air or 40 PSI water**
- **Do not bump or tap**
- **Primary must be replaced after 6<sup>th</sup> cleaning**
- **Replace secondary after 3<sup>rd</sup> cleaning of primary or if the exhaust continues to emit black smoke**

# MAJOR COMPONENTS – COOLING SYSTEM

- **Holds 20 Gals of 50/50 mix**
- **Equipped with a coolant conditioner element**
- **Fill at 5 gal increments to prevent air locks**
- **Self adjusting belts which should have 9/16" - 13/16" play**

# MAJOR COMPONENTS – HYDRAULIC SYSTEM

- **Holds 29 Gals of 10WT**
- **Must read between add/fill marks on sight glass (in correct position)**
- **2 hydraulic pumps**
- **Pressurized system**

# MAJOR COMPONENTS - TRANSMISSION

- **8 FORWARD SPEEDS / 1 REVERSE**
- **Semi automatic from 2 - 8**
- **Downshift inhibitor**
- **Manual for R/1/2**
- **Transmission Hold pedal**
- **Differential Lock Pedal**
- **Holds 22 gal of 15W40**
- **Must read between ADD/FILL line in sight glass**

# MAJOR COMPONENTS - RETARDER

- **Used with the brakes**
- **Creates resistance to the driveshaft, slowing down rotations**
- **3-4 second delay**



# MAJOR COMPONENTS - ELECTRICAL SYSTEM

- **24 Volt negative ground system**
- **4 -12 Volt batteries**
- **Keep terminals clean and batteries tighten down**
- **NATO slave receptacle**

# MAJOR COMPONENTS - DIFFERENTIAL/FINAL DRIVES

- **Holds 42 Gals of 80W90**
- **Final drive is filled with the fill plug at 3 o'clock and the drain plug at 6 o'clock. Fill to bottom of fill opening**
- **Differential must read between add/fill line**

# MAJOR COMPONENTS - TIRES

- **Air pressure should be 60 PSI front/40 PSI rear when parked or being hauled**
- **When hauling material tire pressure will be 55 PSI in the front and 45 PSI in the rear**
- **When traveling you must stop every 3 hours or 40 miles for 30 min to allow the tires, brakes and bearings to cool to prevent explosion**
- **An explosion can propel the tire, rim and final drive components 1500 feet. Danger is greatest once the tractor has stopped.**

# MAJOR COMPONENTS - BRAKES

- **Three types of braking provided: service, Emergency, parking**
- **Service brakes must hold at 1400 RPM's (1500 +/- 100) or non-operational**
- **Emergency brakes must hold at 900 RPM's (1000 +/- 100) or non-operational**
- **If air pressure drops below 40 PSI, emergency brakes will apply**
- **The air tanks must be drained**

# MAJOR COMPONENTS - BOWL



**CUTTING  
EDGES**

**ROUTER BITS**

**MUST BE CHANGED WHEN 1" FROM  
MOLDBOARD**

# DEMENTIONS OF CUT

- **Cut width: 119"**
- **Maximum cut depth: 13.4"**
- **Maximum spread depth: 36"**

# MAJOR COMPONENTS – BOWL

**SAFETY NOTE:** When changing out cutting edges/router bits ensure you block up the bowl and put in the safety lock pin on left side of bowl when the apron is up.



**Block up bowl**

**Safety lock pin  
location**





# MAJOR COMPONENTS - APRON/EJECTOR

- **Apron comprises front wall of the bowl**
- **Ejector comprises the back wall of the bowl**



# QUESTIONS

# ?

# Controls and Instruments





# Floor Controls

ACCELERATOR  
BRAKE PEDAL  
PEDAL

DIMMER SWITCH  
HORN  
SWITCH  
PEDAL



# STEERING COLUMN CONTROLS



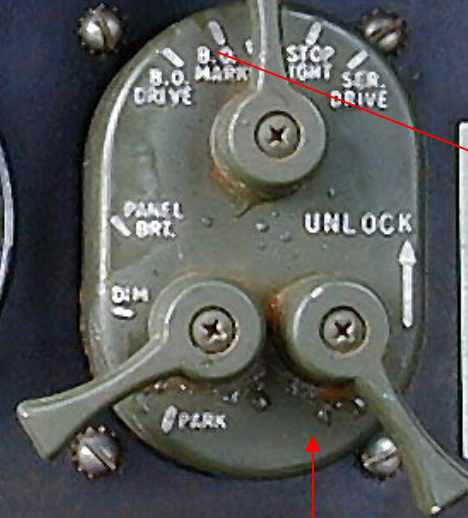
Turn

Retarder



# Right Side of Dash Board

SUPPLEMENTAL STEERING  
LIGHT



PANEL LIGHT  
TACHOMETER  
START SWITCH

FLOOD LIGHT SWITCH

STARTING AID SWITCH

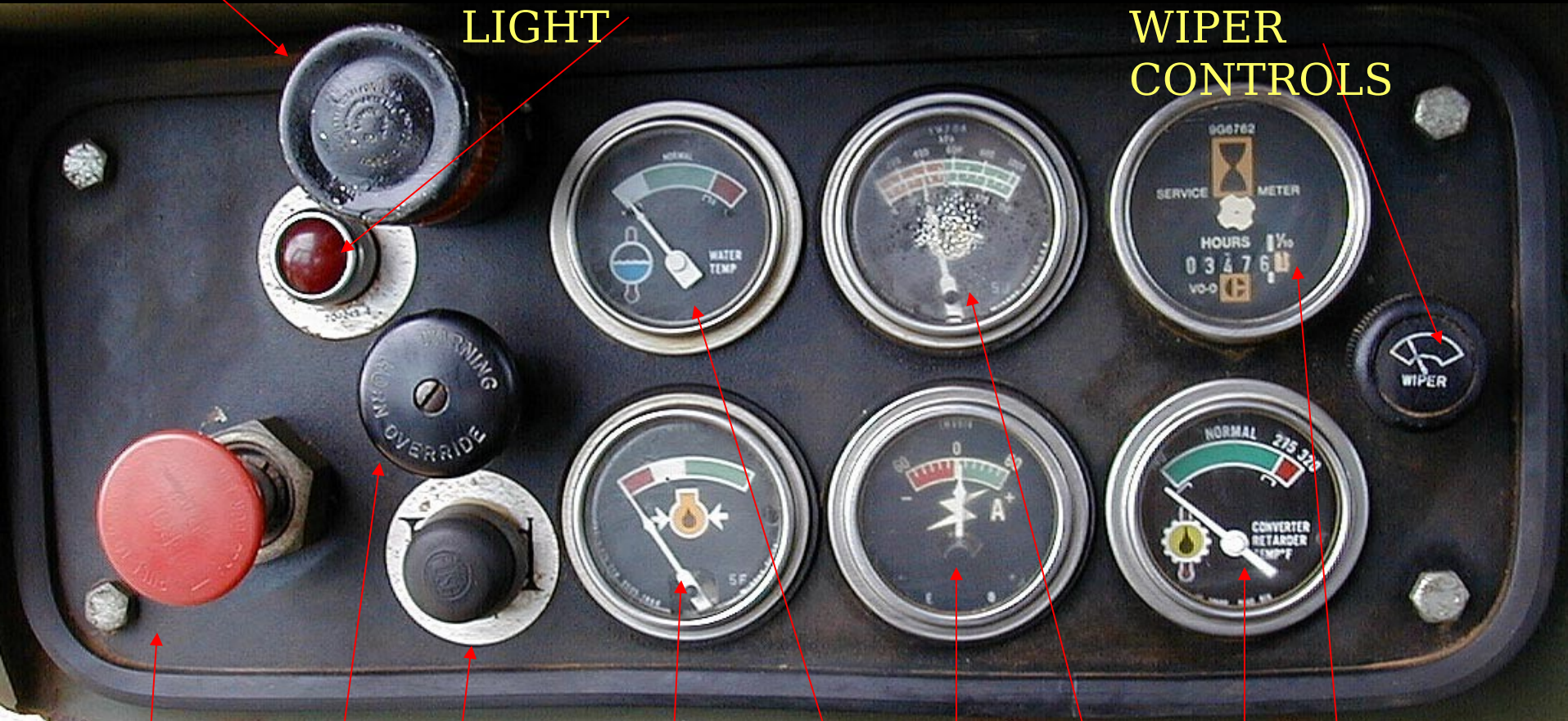


# Left Side of Dash Board

PANEL LIGHT

LOW AIR PRESSURE  
LIGHT

WINDSHIELD  
WIPER  
CONTROLS



WARNING HORN SHUT OFF SWITCH  
PARKING BRAKE BUTTON  
HORN  
OIL PRESSURE GAUGE  
ENGINE TEMP GAUGE  
AIR PRESSURE GAUGE  
VOLT METER  
TORQUE CONVERTER &  
RETARDER TEMP  
GAUGE  
HOURMETER

R



# Transmission Control Lever

1 Reverse Speed

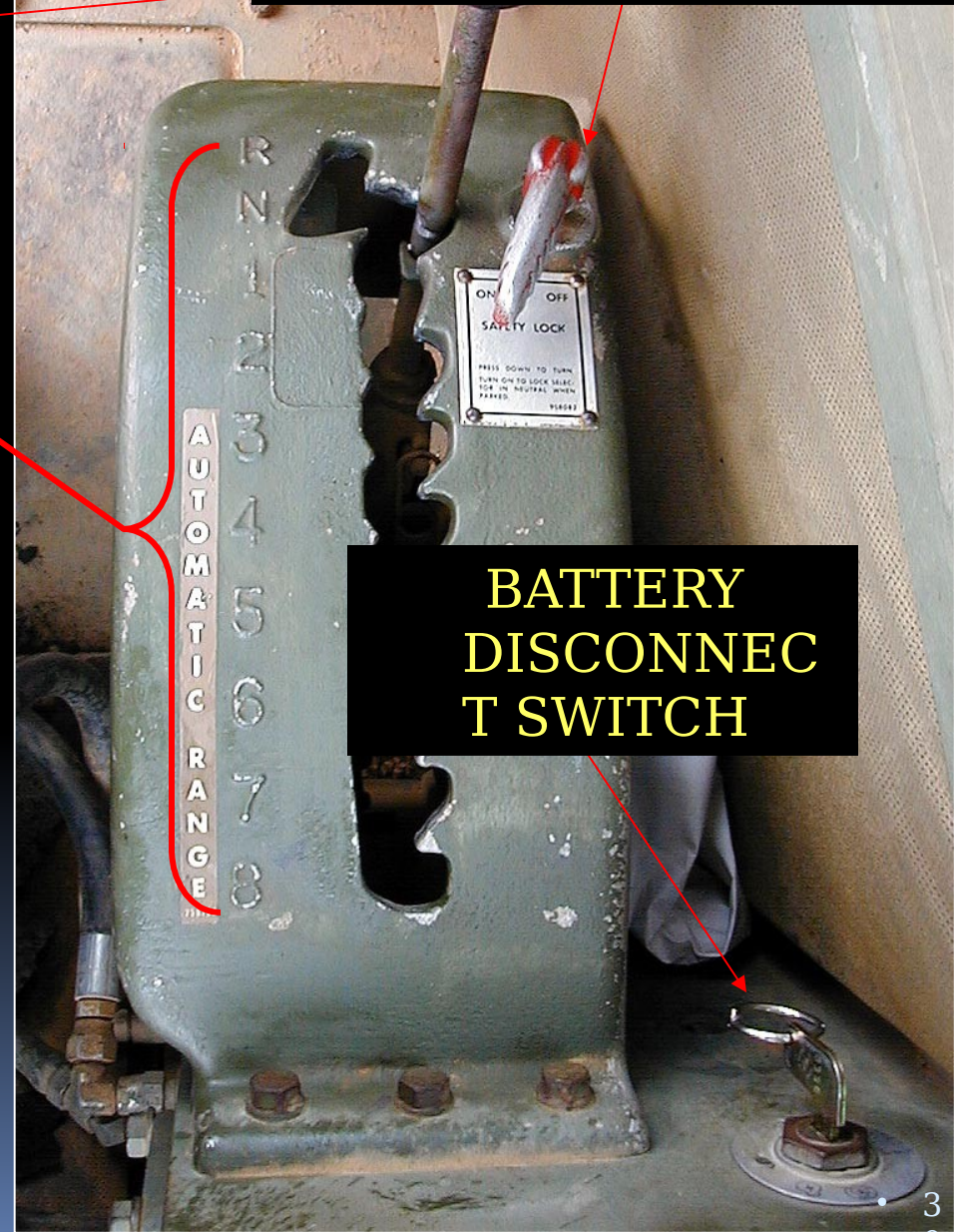
8 Forward Speeds

Reverse, 1<sup>st</sup> and 2<sup>nd</sup>  
gears

are manual.  
3<sup>rd</sup> through 8<sup>th</sup> are

automatic shift.  
Downshift Inhibitor  
Automatically  
Engaged

TRANSMISSION  
NEUTRAL SAFETY  
LOCK



BATTERY  
DISCONNECT  
SWITCH

# Seat Control Lever



## A. SUSPENSION

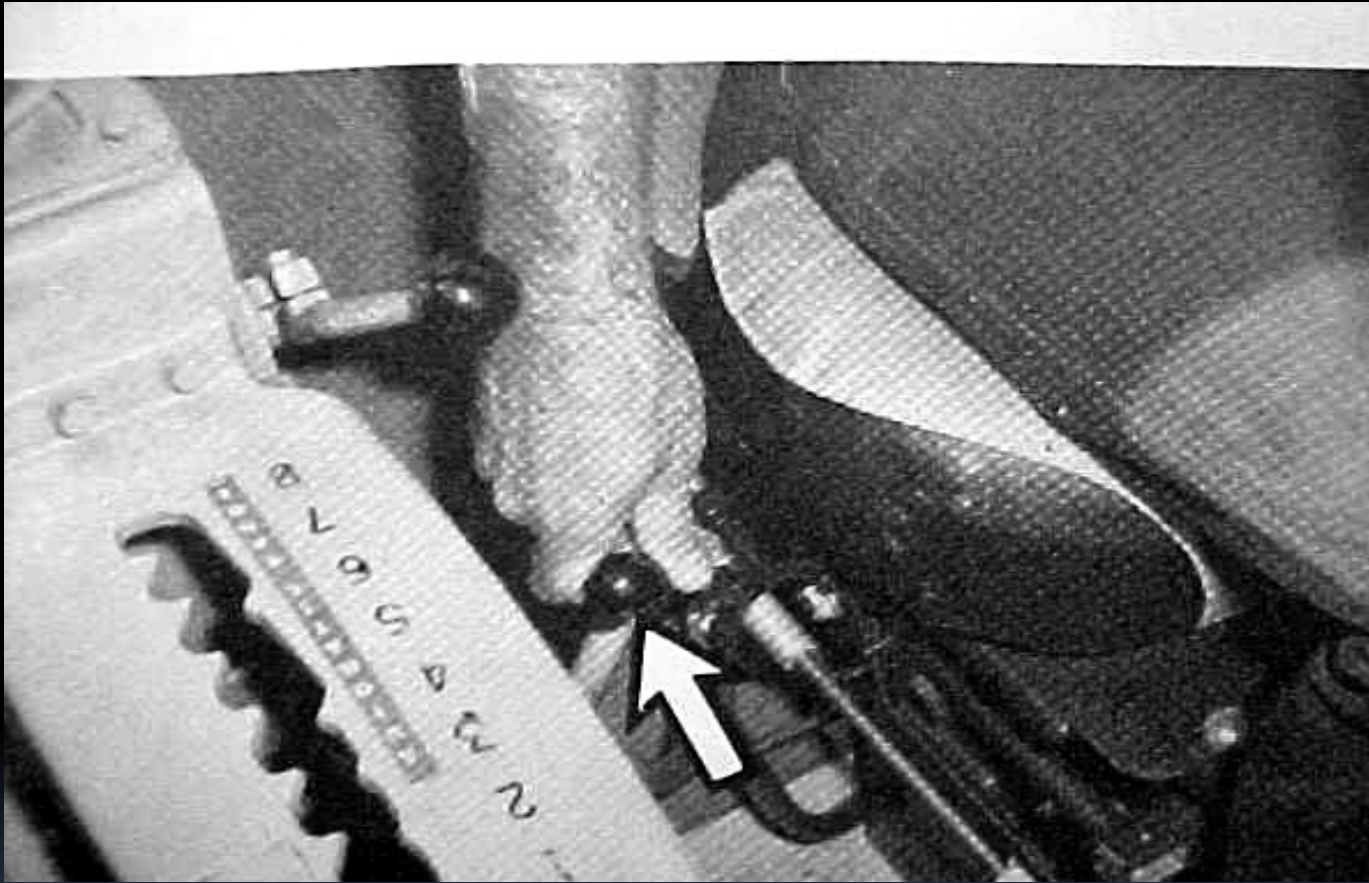
# Seat Control Lever



**B. FORWARD AND BACK**

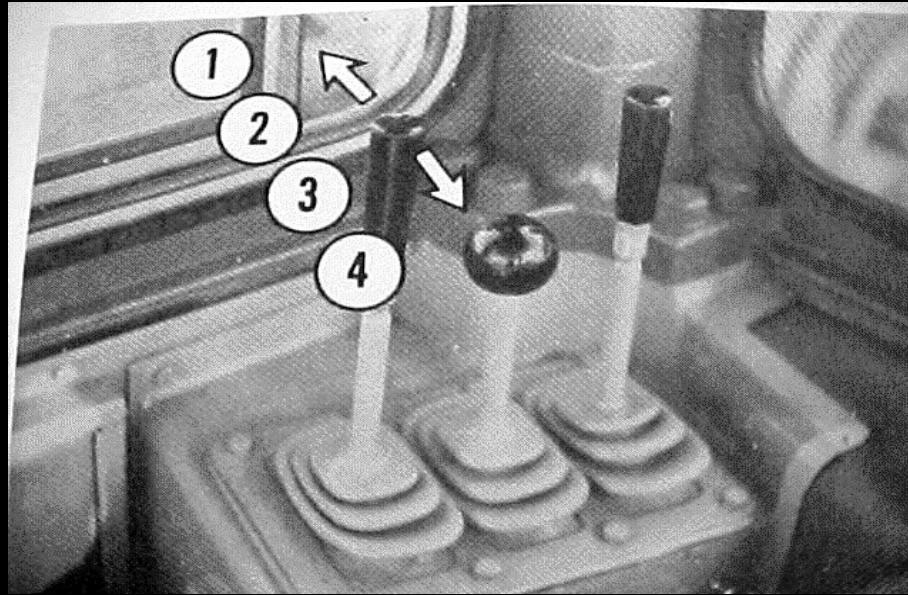


# Seat Control Lever



**C. HEIGHT**

# Bowl Control Lever



1. QUICK DROP

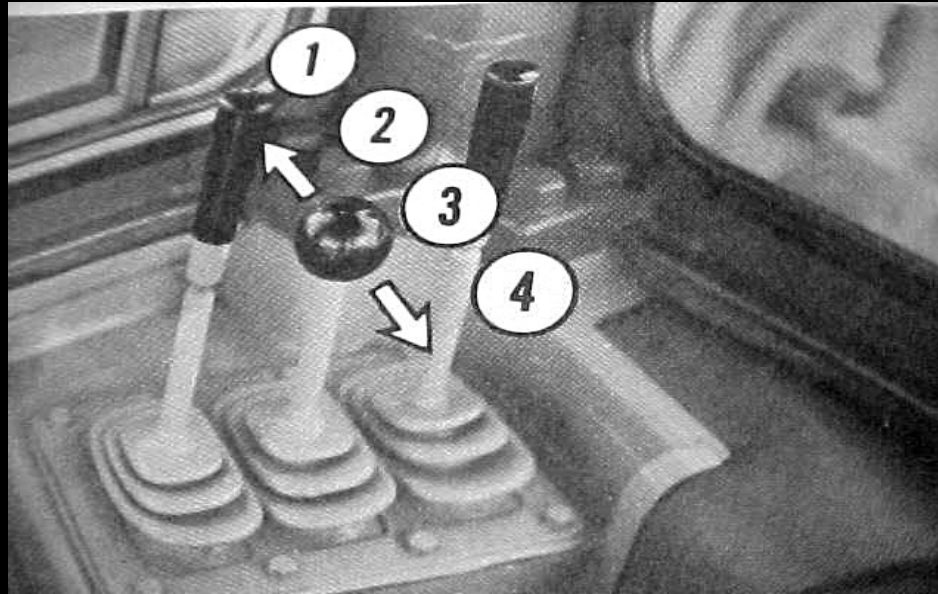
2. LOWER

3. HOLD

4. RAISE

5. Additional function feature. – Move the lever towards the front of console to close the apron and lift the bowl at the same time.

# Apron Control Lever



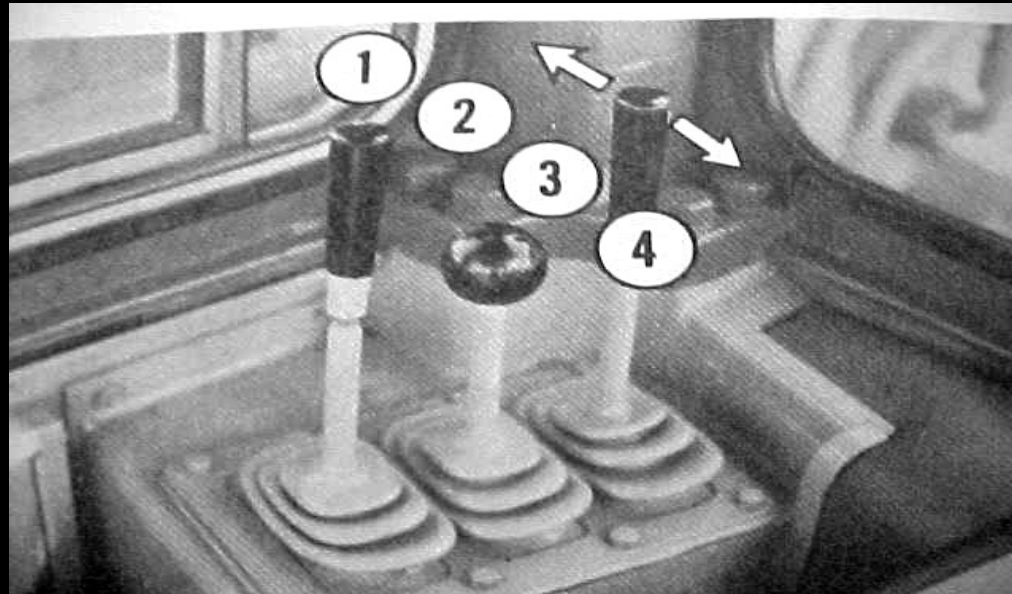
1. FLOAT

2. CLOSE

3. HOLD

4. OPEN

# Ejector Control Lever



1. AUTOMATIC  
EJECTOR RETURN  
KICK OUT  
3. HOLD

2. RETURN

4. FORWARD



# QUESTIONS ?

**10 MIN. BREAK**

# Park-line Position



Park brake set

Transmission in neutral

Neutral safety lock engaged

Bowl on ground

Ejector to the rear

Apron closed and in float



# Travel Position (loaded and unloaded)



Bowl 4-6" off the ground

Apron closed and in float

Ejector to the front or rear

# SCRAPER PROCEDURES

- **POSITION THE SCRAPER INTO THE CUT**
- **REMOVE RIGHT FOOT FROM THROTTLE**
- **LOOK OVER RIGHT SHOULDER**
- **LOWER BOWL 2-4 INCHES INTO THE DECK**
- **ONCE DOZER MAKES CONTACT, PLACE LEFT FOOT ON DIFFERENTIAL LOCK AND TRANSMISSION HOLD.**
- **MAINTAIN RPMS AT 1200-1500**
- **CONSTANTLY LOOK FORWARD AND BACK TO ENSURE YOU ARE STILL CUTTING AND THAT YOU ARE STRAIGHT**
- **ONCE BOWL IS FULL PLACE FOOT BACK ON LPEG**
- **GO TO FULL THROTTLE AND COMPLETE ADDITIONAL FUNCTIONS**
- **PLACE APRON IN FLOAT**
- **BOWL IS 4" - 6" OFF THE DECK IN TRAVEL POSITION**

# Excavating with Dozer Assistance

- Remove foot from throttle
- Look over right shoulder
- Lower bowl 2-4" into the ground
- Push on D/L and T/H pedals
- Raise RPMS to 1200 – 1500
- Place foot on L peg (after bowl is full)
- Complete load and move out

# DOZER PROCEDURES

- **MOVE BEHIND SCRAPER AFTER IT ENTERS THE CUT**
- **LOWER BLADE UNTIL PUSH ARMS ARE PARALLEL TO THE DECK**
- **ALIGN THE REINFORCED AREA OF THE DOZER BLADE ON THE SCRAPERS PUSH BLOCK**
- **ENGAGE THE SCRAPER WITHOUT SLAMMING INTO IT**
- **LET GO OF THE STEERING LEVERS, DECELERATOR AND BRAKES AND GO TO FULL THROTTLE**
- **MAKE SURE YOU ARE IN 2<sup>ND</sup> GEAR**
- **PUSH ALL THE WAY THROUGHT THE CUT**
- **REPOSITION DOZER FOR NEXT PUSH**

# SPREADING THE LOAD

- **Raise bowl to desired spread depth**
- **(approx. 4-6 inches)**
  - At the same time:**
    - **Raise apron to 3 knuckles (less with sand)**
    - **Bring ejector forward until material is emptied**
    - **When empty, close apron and return ejector to the rear.**
    - **Raise the bowl slowly to leave the fill area smoothly.**



# ROUGH LEVELING

- **Open the apron all the way**
- **Move ejector to the front**
- **Raise bowl approximately 1/2" off the deck**
- **Travel at a speed that will allow tractor to travel without bouncing**

**Note:** Ensure that the stinger bit is reversed

# PRODUCTION TECHNIQUES

- **Downhill loading**

- Increase production by 20% by using

- **Pump Loading**

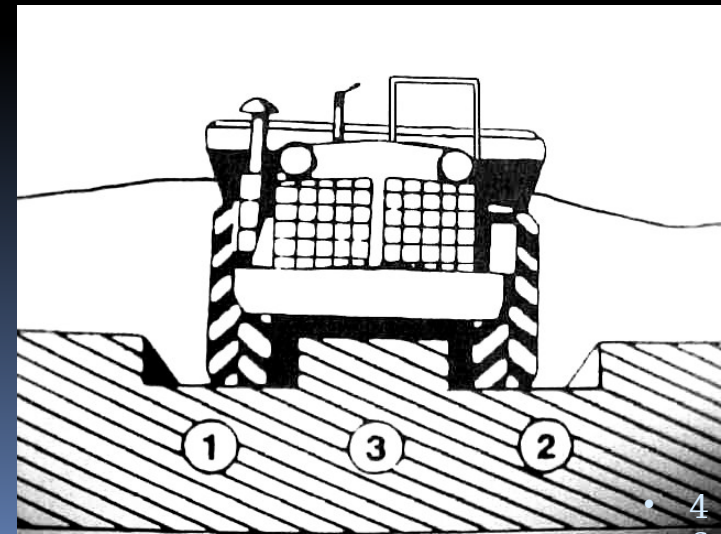
- Used for soft materials like sand

**Note:** Enter as fast as possible and lower the bowl slowly using the bowl's momentum to fill as much as possible. ONCE MOMENTUM IS LOST START PUMPING Raise bowl up then repeat by lowering bowl again.

- **Straddle loading**

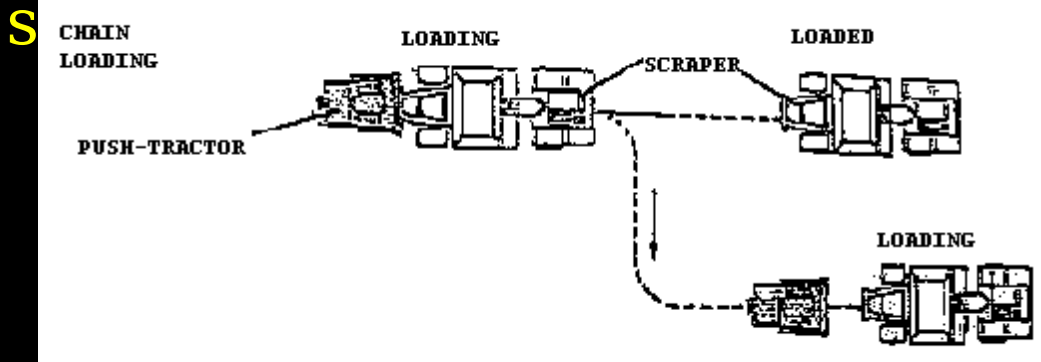
- Increases production on every third pass

**Note:** ENSURE YOU LEAVE AT LEAST A 4 - 5 FOOT STRIP IN BETWEEN THE 1<sup>ST</sup> AND 2<sup>ND</sup> CUTS

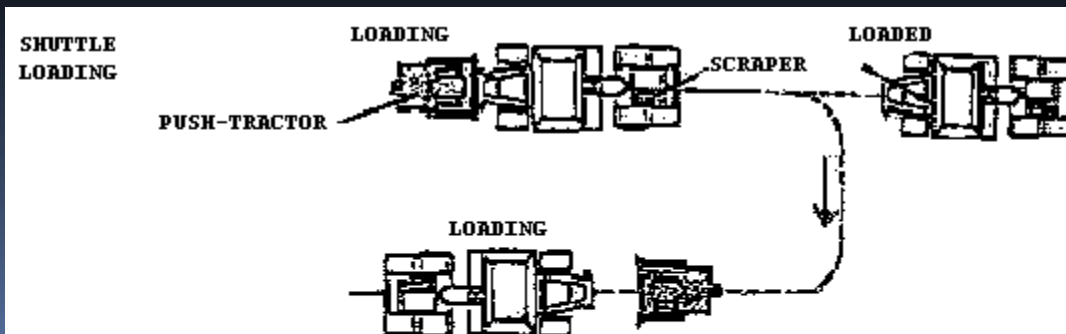


# PRODUCTION TECHNIQUES

- Chain-loading
- Used for long continuous cuts with two or more

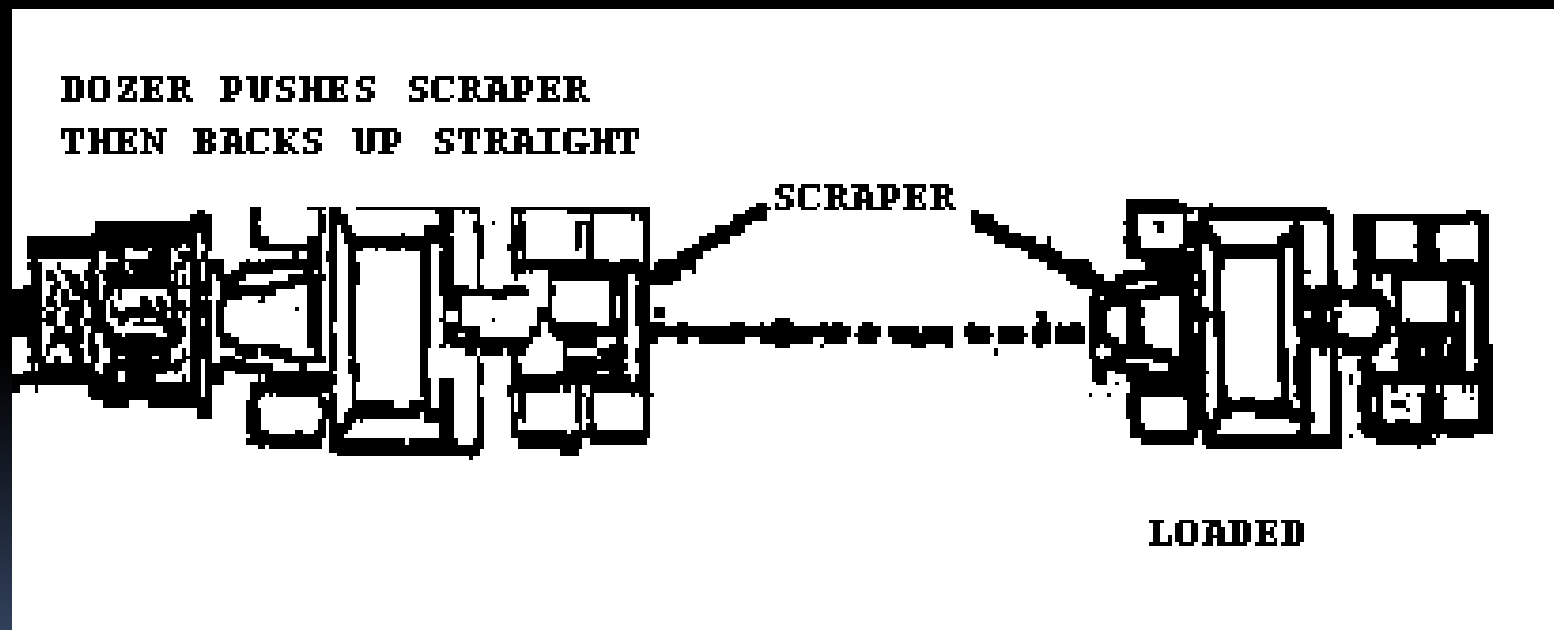


- Shuttle Loading
- Short cuts in both directions



# PRODUCTION TECHNIQUES

- Backtrack-loading
- Used for short cuts when it is impractical to cut in both directions



# QUESTIONS ?

**10 MIN. BREAK**

# PMCS

- RECOGNIZING POTENTIAL PROBLEMS AND PREVENT IT FROM HAPPENING
- Always done by the book
- Annotate dead lining items
- Lube IAW LO/LI
- Some reasons to lube
- Don't lube items that don't need it
- Wipe off grease fittings before and after
- Keep lubricants in their containers until needed
- Write down discrepancies
- Check everything

# LEAK CLASSIFICATIONS

- **CLASS I** – SEEPAGE OF FLUID NOT GREAT ENOUGH TO FORM DROPS
- **CLASS II** – GREAT ENOUGH TO FORM DROPS BUT NOT DRIP
- **CLASS III** – GREAT ENOUGH TO FORM DROPS THAT DRIP



# CAUTION

- Equipment operation is allowable with minor leakage (Class I or II). Of course, consideration must be given to the fluid capacity in the item/system being checked/inspected. When operating with a Class I or II leaks, continue to check fluid levels as required to ensure it stays full. Class III leaks should be reported to your supervisor or organizational maintenance.

# QUESTIONS ?